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IN THE TECHNICAL COUNCIL OF THE MINISTRY OF COMMUNICATIONS

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Unsigned article

The technical council of the Ministry of Communications heard a lecture by the senior scientific worker of the Leningrad division of the Central Scientific Research Institute of the Ministry of Communication (LONIIS), candidate of technical sciences V. V. Shtager entitled "Methods and Apparatus for Suppressing Noise in Telephone Communication and Broadcast Channels."

The use of apparatus for suppressing noises solves the problem of noise prevention in communication channels. This results in considerably lesser requirement of line structures in respect to the line noise level and crosstalk level, and consequently results in greater economy. The development and the adoption of such apparatus is therefore of great significance for the management of communication.

The lecture discussed the principles that can serve as a basis for the development of apparatus for suppressing noise. A report was made on the results of the development of a simplified (inertia) compressor-expandor device for telephone communication channels employing a potentiometer circuit, compressor-expandor devices for broadcast channels, as well as a noise suppressor (threshold expandor) employing a potentiometer circuit.

The lack of sufficient data on the operation of these devices make it impossible to evaluate quantitatively the effect of the noise suppression resulting from the use of a compressor-expandor device in various communication systems, and consequently to determine with sufficient assurance whether these devices are useful for all the applications of the telephone channels (photo communication etc).

Nevertheless, the results of the investigations made by the LONIIS already permit the use of these devices in existing telephone-communication channels having higher noise levels (particularly in rime or glazed frost conditions), and also in the carrier-channelizing apparatus for steel circuits that is now being developed.

Many questions were not answered in the lecture. The lecture does not answer the question of how much the norm of the crosstalk between circuits can be reduced. This is a basic factor determining the complexity of the transposition scheme and its cost.

The question of the permissible norms for the deviation of residual attenuation, due to the effect of the compressor-expandor device, is not discussed. Nor is there discussion of the non-linear distortion and the behavior of the compressor-expandor device when several frequencies are simultaneously applied at the input and of other problems.

Recognizing the significance of noise-suppression apparatus, the technical council recommended the continuance of theoretical and experimental investigations at the Central Scientific Research Institute of the Ministry of Communication, with expanded scope.

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The technical council has approved the trend of the work of the LONIIS to develop inertia compressor-expandor devices for telephone communication channels, inertia compressor-expandor devices for broadcast channels, inertia noise suppressors for broadcast channels, and also work on finding other methods of noise suppression, not in use at the present time, particularly the investigation of inertialess compressor-expandor devices.

It is necessary to accelerate the manufacture of the sets of devices, developed by the LONIIS, and to test in the second half of 1953 an experimental run in the communication lines, to evaluate the benefits obtained from these devices in principal communication systems, and to make recommendations concerning their introduction.

The technical council recommended that in the future detailed theoretical and experimental investigations be made on the effect of the amplitude and phase characteristics of the intermediate channel on the operation of the compressor-expandor devices, to determine the stability requirements of the residual-attenuation characteristics in telephone channels when these devices are used, and to develop a proposed objective procedure for comparing the quality of telephone channels before and after they are equipped with the compressor-expandor devices.

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